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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/696,040 | 10/30/2003 | Hidetaka Hattori | 244278US2S DIV | 6530 |

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
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EXAMINER

NGUYEN, DAO H

ART UNIT PAPER NUMBER

2818

DATE MAILED: 07/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/696,040

Applicant(s)

HATTORI ET AL.

Examiner

Dao H Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 09/799,026.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. In response to the communications dated 10/30/2003, claims 17-19 are active in this application the cancellation of claims 1-16 and 20-32 in the Preliminary Amendment filed 10/30/2003.

Acknowledges

2. Receipt is acknowledged of the following items from the Applicant.

a. Information Disclosure Statement (IDS) filed on 10/30/2003 and made of record as Paper No. 1003. The references cited on the PTOL 1449 form have been considered.

Applicant is requested to cite any relevant prior art if being aware on form PTO-1449 in accordance with the guidelines set for in M.P.E.P. 609.

b. This application is a Divisional of Application No. 10/294,583, filed 11/15/2002, now Patent No. 6,670,658, which is a Divisional of Application No. 09/799,026, filed 03/06/2001, now Patent No. 6,495,871.

Foreign Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in prior Application No. 09/799,026.

Specification

4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim(s) 17 is/are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 17, line 7, the limitation "that portion" is not clearly defined and distinctly pointed out the subject matter which is claimed as the Applicant's invention. What does "that" refer to?

Claim Rejections - 35 USC § 102

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7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

8. Claim(s) 17-19 is/are rejected under 35 U. S. C. § 102 (e) as being anticipated by U.S. Patent No. 6,501,128 to Otsuki.

Regarding claim 17, Otsuki discloses a semiconductor element, as shown in figures 1, 2(a-b), 3e, for example, comprising:

a first base layer 3 of a first conductivity type (n-type);

a second base layer 5 of a second conductivity type (p-type) formed selectively in one surface region of said first base layer 3,

an emitter layer or a source layer 6 of the first conductivity type (n-type) formed selectively in a surface region of said second base layer 5;

a gate electrode 7 formed on a portion of said second base layer 5 which is positioned between said emitter layer or source layer 6 and said first base layer 3 with a gate insulating film 10 interposed between said gate electrode 7 and said second base layer 5;

a collector layer or a drain layer 2 formed on the other surface region of said first base layer 3 or formed selectively on one surface region of the first base layer 2;

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a first main electrode 1 formed on said collector layer or on said drain layer 2;
a second main electrode 9 formed on said emitter layer or source layer 6 and on said second base layer 5; and
a channel region (a long line AA in fig. 2a; see also column 3, lines 37-39) formed in contact with said gate insulating film 10 to permit the carrier to migrate between said emitter layer or source layer 6 and said first base layer 3, said channel region having an impurity concentration profile such that the impurity concentration is substantially constant along said gate insulating film 10 and in the direction in which the emitter layer or source layer 6, the second base layer 5, and the first base layer 3 are formed in the order mentioned.

Note that as shown in figures 1 and/or 3e, the channel region is the horizontal region right under the gate insulating film 10 and extend from the left edge of the second base 5 to the left edge of the emitter 6, which is also the offset or extended portion of base 5 (see column 9, lines 10-13, and lines 34-36). Column 4, lines 15-17, and column 10, lines 9-11 teach that the impurity concentration of the extended portion is preferably constant for the width of at least 0.5 μm .

Regarding claim 18, Otsuki discloses the semiconductor element wherein said gate electrode is buried in a trench with a gate insulating film interposed between said gate electrode and said trench, said trench being formed to extend from the surface of said emitter layer or source layer to reach an intermediate portion of said first base layer

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through said second base layer. See column 4, lines 44-57; column 8, lines 29-46; and fig. 8.

Regarding claim 19, Otsuki discloses the semiconductor element wherein said gate electrode 7 is formed on said gate insulating film 10 formed on the surface of said second base layer 5. See figure 1.

Conclusion

9. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dao H. Nguyen whose telephone number is (571)272-1791. The examiner can normally be reached on Monday-Friday, 9:00 AM – 6:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)272-1787. The fax numbers for all communication(s) is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571)272-1625.

A handwritten signature in black ink, appearing to read 'Dao', with a long horizontal line extending from the end of the signature.

Dao H. Nguyen
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July 11, 2004

A handwritten signature in black ink, appearing to read 'David Nelms', with a large loop at the beginning.

David Nelms
Supervisory Patent Examiner
Technology Center 2800